Louisiana Coastal Area (LCA), LA

Comprehensive Coastwide Ecosystem Restoration Study

The LCA Long-Term Goals

- Compelling rationale for national action and long-term commitment
- Blueprint for action at a coast-wide scale
- Basis for Congressional approval of a comprehensive plan in WRDA ’04
- Delegation of some project approval authority

Establish Subprovinces

Objectives

- **Identify and explore long-range, large-scale ecosystem restoration strategies to restore and protect coastal Louisiana.**

- **Sustain coastal ecosystem that supports and protects the environment, economy and culture of southern Louisiana, and that contributes greatly to the economy and well-being of the nation.**

Study Objectives

- Ecosystem Objectives
  - Improve productivity and sustain diverse Fish and Wildlife Habitats
  - Reduce nutrient delivery to the Shelf
- Hydro-geomorphic Objectives
  - Salinity gradients
  - Increase sediment input
  - Maintain or establish natural landscape features

Subprovince Alternatives

32 Subprovince Alternatives

- **Subprovince 1 = 10 Alternatives**
- **Subprovince 2 = 10 Alternatives**
- **Subprovince 3 = 5 Alternatives**
- **Subprovince 4 = 7 Alternatives**

Coastwide Alternative Development

- **Certain Subprovince 1, 2, and 3 alternatives are mutually exclusive since they are dependent on the Mississippi River**
- **Subprovince 4 alternatives are not dependent on the Mississippi River and can be combined with any appropriate set of Subprovince 1, 2, and 3 alternatives**
- **There are numerous combinations of Coastwide alternatives resulting from defining appropriate sets of Subprovince alternatives**

Coastwide Alternative Development

- **Costs determined for each subprovince alternative**
- **Ecological benefits developed from modeling results for each subprovince alternative**
- **COE computer program displayed most cost efficient Coastwide Alternatives based on maximizing ecological benefits vs. costs.**

Criteria for the Identification of the Most Efficient Coastwide Plans

- Effective plans should exceed outputs attainable through existing budget authorities such as CWPPRA ($60 million per year).

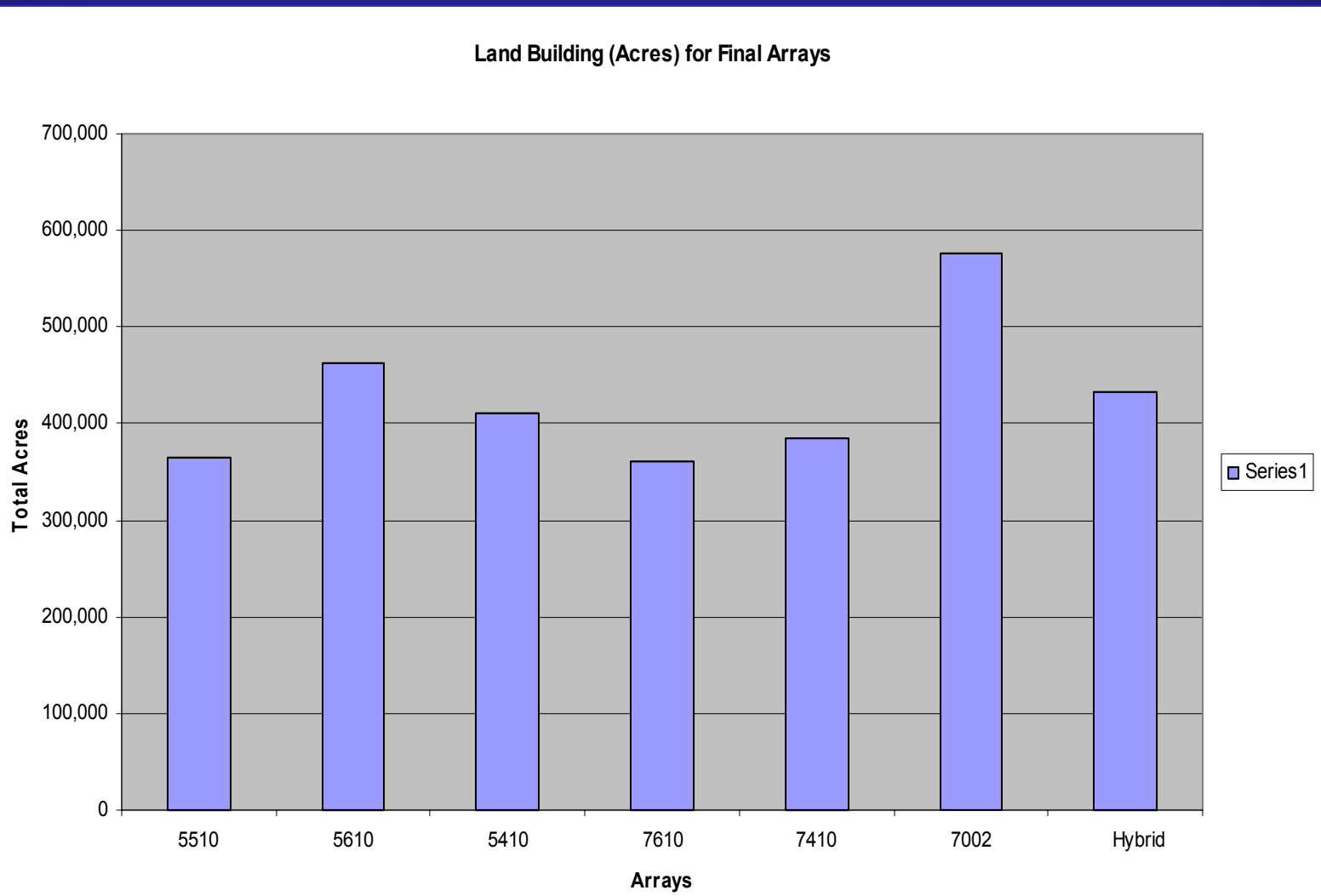
- Coastwide Plans should produce a minimum reduction in current land loss of one half,

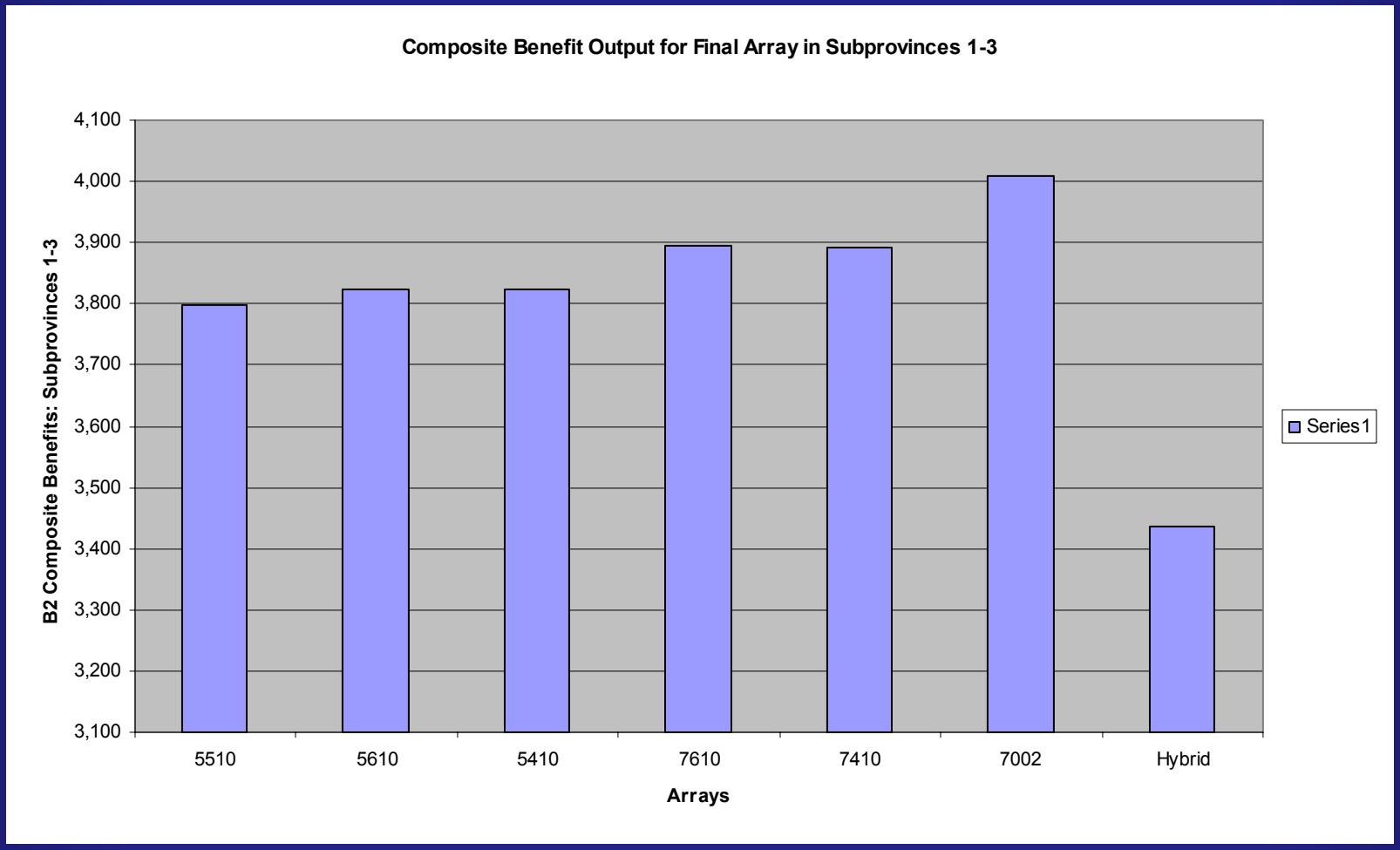
- Each Coastwide Plan should include measures in each subprovince to protect infrastructure.

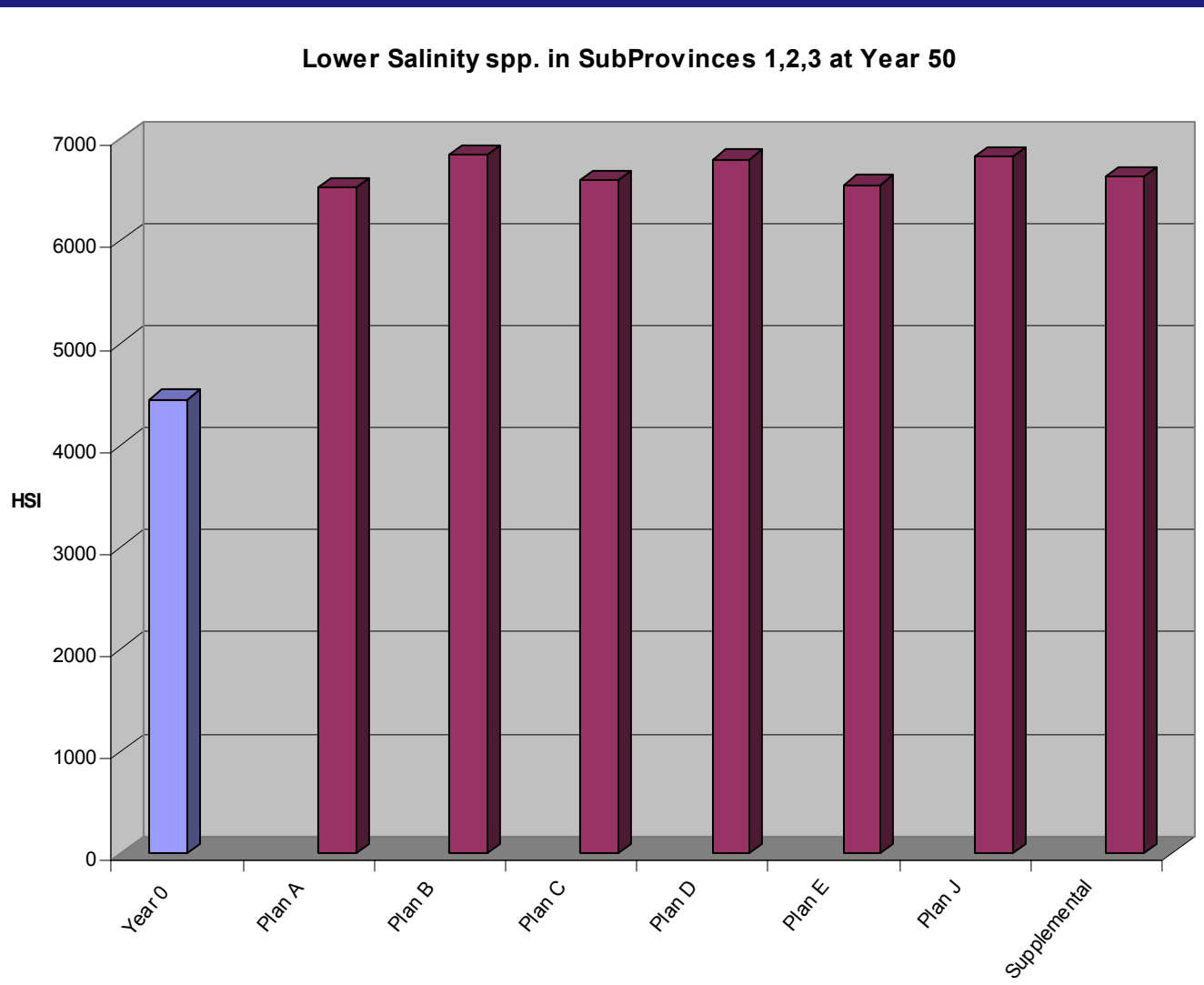
- Coastwide plans should give consideration to essential or rare habitat types such as barrier shorelines and islands.

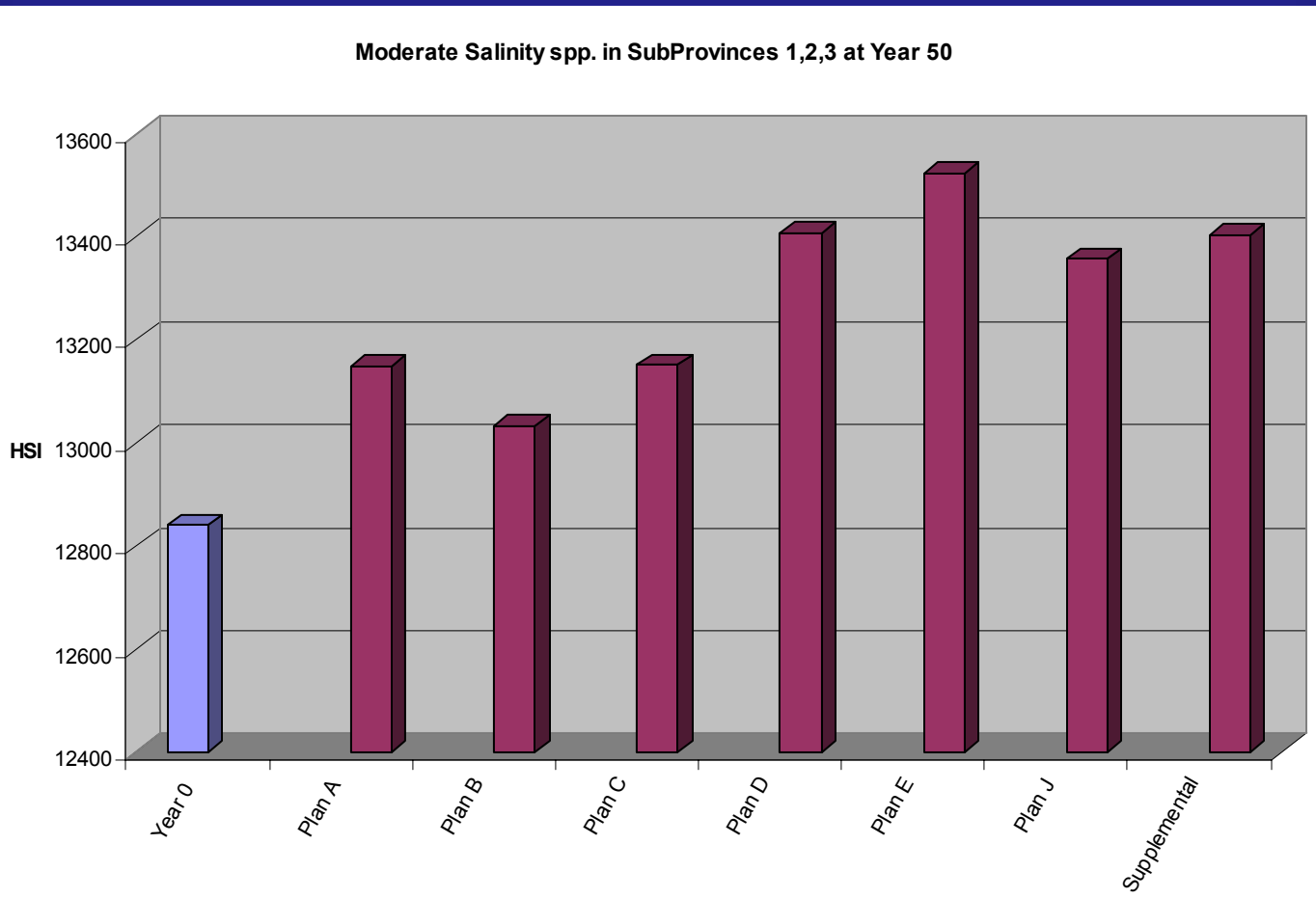
Comparison of Coastwide Plan Combinations

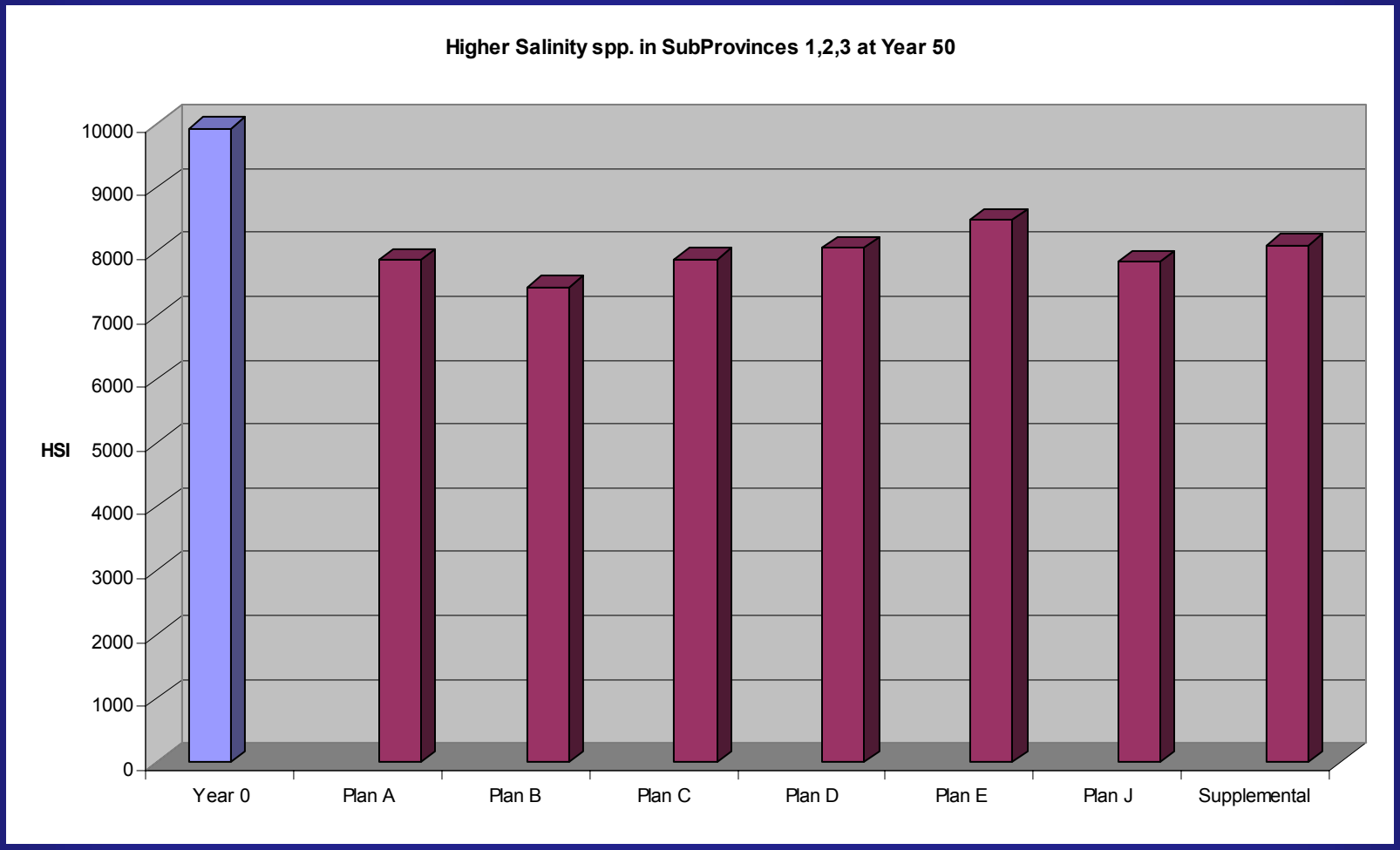
This information allowed the team to differentiate between the cost effective plans based on outputs that best achieved the various components of the planning objectives. A side by side comparison of the coastwide plans in the final array for several benefit outputs was made.


Land Building (Acres) for Final Arrays
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Total Acres
5510
5610
5410
7610
7410
7002
Hybrid
Arrays
Series1


Composite Benefit Output for Final Array in Subprovinces 1-3
B2 Composite Benefits: Subprovinces 1-3
4,100
4,000
3,900
3,800
3,700
3,600
3,500
3,400
3,300
3,200
3,100
5510
5610
5410
7610
7410
7002
Hybrid
Arrays
Series1


Lower Salinity spp. in SubProvinces 1,2,3 at Year 50
HSI
7000
6000
5000
4000
3000
2000
1000
0
Year 0
Plan A
Plan B
Plan C
Plan D
Plan E
Plan J
Supplemental


Moderate Salinity spp. in SubProvinces 1,2,3 at Year 50
HSI
13600
13400
13200
13000
12800
12600
12400
Year 0
Plan A
Plan B
Plan C
Plan D
Plan E
Plan J
Supplemental


Higher Salinity spp. in SubProvinces 1,2,3 at Year 50
HSI
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Year 0
Plan A
Plan B
Plan C
Plan D
Plan E
Plan J
Supplemental

Array of Efficient Coastwide Plan Combinations Subprovince 1-3

	Subprov 1	Subprov 2	Subprov 3	Subprov 4
A -5110	M2;	R1;	R1	E2
B -5610	M2;	M3;	R1	E2
C - 5410	M2;	M1;	R1	E2
D - 7610	E1;	M3;	R1	E2
E -7410	E1;	M1;	R1	E2
J -7002	E1;	E3;	M1	E2
Supp	M2 +	M1/E3	R1/M1	E2 -

- As you can see, some subprovince alternatives are included in more than one coastwide plan
- All subprovince alternatives that are components of the most efficient array of coastwide plans will be described.
- The results of the COE MRGO Reevaluation Study will be included in whichever plan is selected.

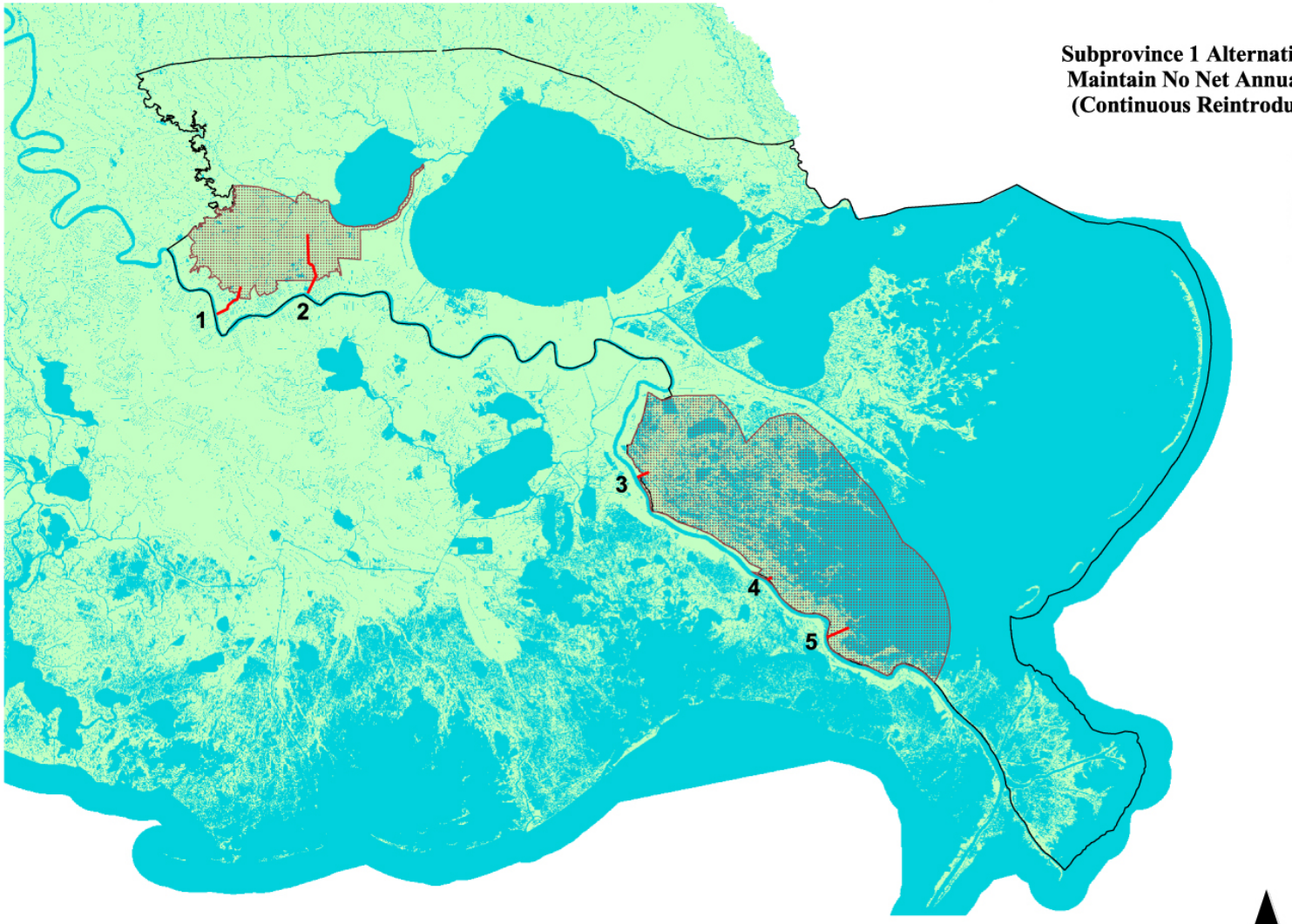
Coastwide Plan Component
Subprovince 1 – M2

Continuous Reintroduction included in plans 5110, 5610, 5410:

- **1 - 5,000 cfs diversion at Convent / Blind River**
- **2 - 1,000 cfs diversion at Hope Canal**
- **3 - 10,000 cfs diversion at White's Ditch**
- **4 - 110,000 cfs diversion at American /California Bay with sediment enrichment**

5 - 12,000 cfs diversion at B. Lamouque

Subprovince 1 – M2



Subprovince 1 Alternative M2:
Maintain No Net Annual Loss
(Continuous Reintroduction)

Measure Descriptions:

1) 5,000 cfs diversion at Convent/Blind River
2) 1,000 cfs diversion at Hope Canal
3) 10,000 cfs diversion at White's Ditch
4) 110,000 cfs diversion at American/California Bay with sediment enrichment
5) 12,000 cfs diversion at Bayou Lamoque

River diversion
Influence area
Subprovince boundary

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National Wetlands Research Center
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New Orleans, LA 70118

Map ID: USGS-NWRC 2003-12-187
Map Date: April 3, 2003

Image: 2000 Landsat 7 Thematic Mapper
(Classified Land-Water)

5 0 5 10 15
Miles

N

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Louisiana Coastal Area,
Comprehensive Coastwide Ecosystem Restoration Study

Subprovince 1 Alternative M2

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

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PLATE B-6

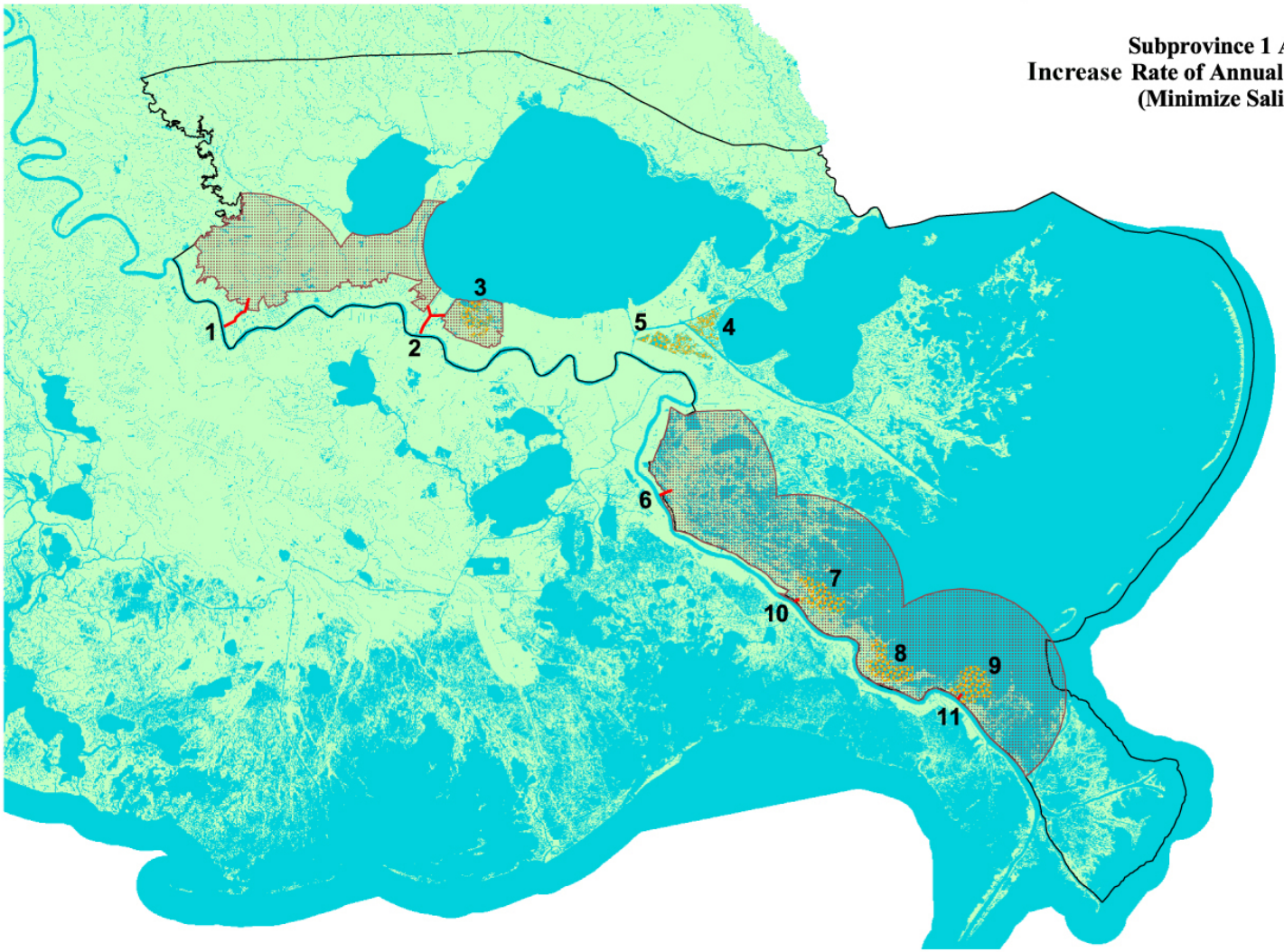
included in plans 5110,5610, 5410, 5120, 5620, and 5710

Coastwide Plan Component
Subprovince 1 – E1

Minimize salinity changes included in plans 7610, 7410, and 7002:

- **1 - 5,000 cfs diversion at Convent / Blind River**
- **2 - 10,000 cfs diversion at Bonnet Carre Spillway**
- **3 - Sediment delivery via pipeline at La Branche**
- **4 - Sediment delivery via pipeline at Golden Triangle**
- **5 - Sediment delivery via pipeline at Central Wetlands**
- **6 - 6,000 cfs diversion at White's Ditch**
- **7 - Sediment delivery via pipeline at American / California Bay**
- **S8 - ediment delivery via pipeline at Quarantine Bay**
- **S9 - ediment delivery via pipeline at Fort St. Phillip**
- **10 - 15,000 cfs diversion at American / California Bay**
- **11 - 15,000 cfs diversion at Fort St. Phillip**

Subprovince 1 – E1



Subprovince 1 Alternative E1:
Increase Rate of Annual Net Land Gain by 50%
(Minimize Salinity Changes)

Measure Descriptions:

1) 5,000 cfs diversion at Convent/Blind River
2) 10,000 cfs diversion at Bonnet Carre Spillway
3) Sediment delivery via pipeline at Labranche
4) Sediment delivery via pipeline at Golden Triangle
5) Sediment delivery via pipeline at Central Wetlands
6) 6,000 cfs diversion at White's Ditch
7) Sediment delivery via pipeline at American/California Bay
8) Sediment delivery via pipeline at Quarantine Bay
9) Sediment delivery via pipeline at Fort St. Philip
10) 15,000 cfs diversion at American/California Bay
11) 15,000 cfs diversion at Fort St. Philip

River diversion
Marsh creation
Influence area
Subprovince boundary

Map Produced By:

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National Wetlands Research Center
U.S. Army Corps of Engineers Project Office
New Orleans, LA 70118

Map ID: USGS-NWRC 2003-12-189
Map Date: May 8, 2003

Image: 2000 Landsat 7 Thematic Mapper
(Classified Land-Water)

5 0 5 10 15
Miles

N

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Study

Subprovince 1 Alternative E1

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
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NEW ORLEANS, LOUISIANA

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PLOT DATE:
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DATE:

PLATE B-8

included in plans 7610, 7410, 7120, and 7002

Coastwide Plan Component
Subprovince 2 – R1

Minimize salinity changes, included in plan 5110:

1 - 5,000 cfs diversion @ Edgard w/sediment enrichment

2. Sediment delivery via pipeline at Myrtle Grove

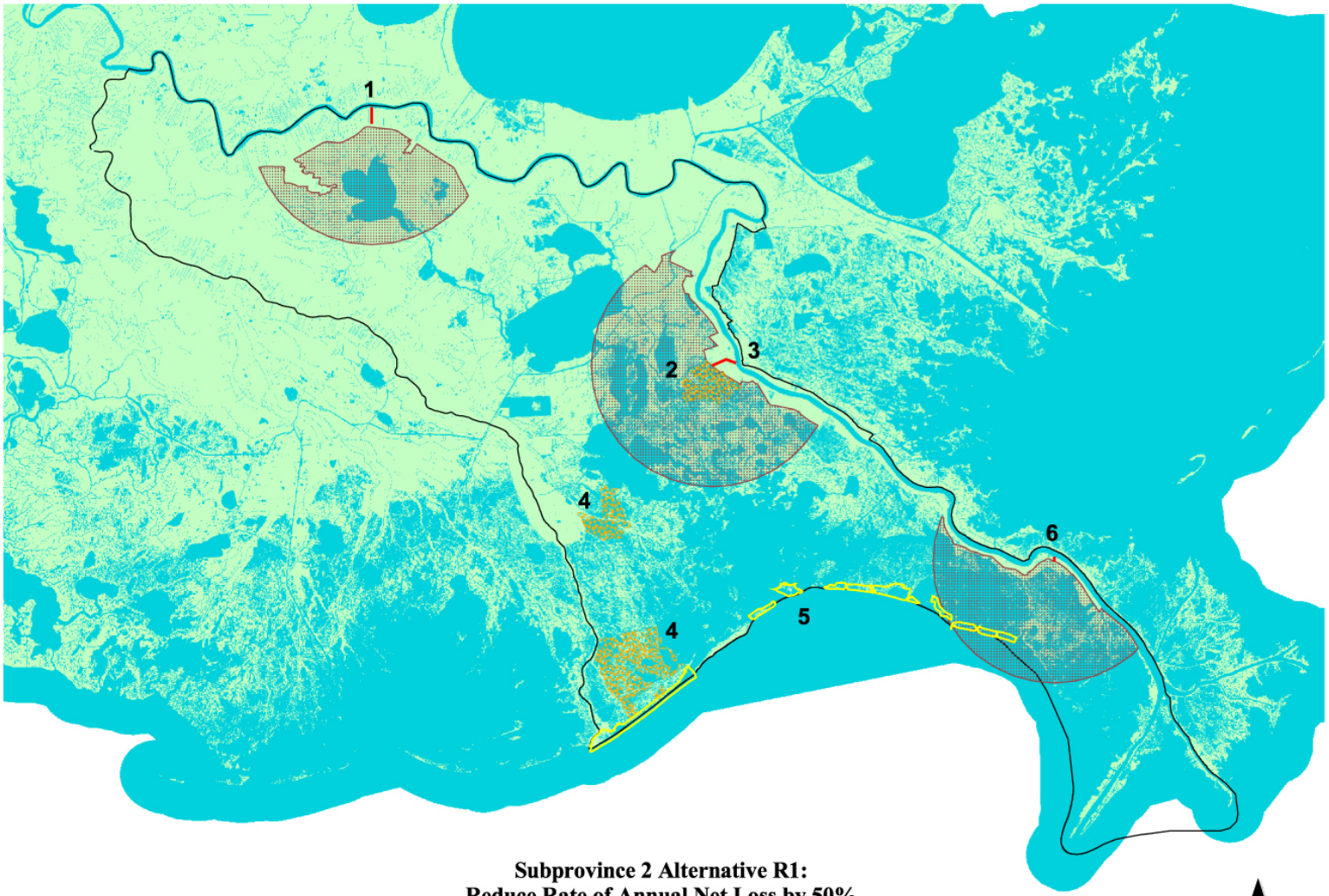
3. 5,000 cfs diversion at Myrtle Grove

4. Marsh creation @ Marsh Creation Feasibility Study Sites

5. Barrier island restoration @ Barataria Shoreline Feasibility Study

6. 60,000 cfs diversion at Ft. Jackson

Subprovince 2 – R1



Measure Descriptions:

1) 5,000 cfs diversion at Edgard with sediment enrichment
2) Sediment delivery via pipeline at Myrtle Grove
3) 5,000 cfs diversion at Myrtle Grove
4) Marsh creation feasibility study
5) Barrier island feasibility study
6) 60,000 cfs diversion at Fort Jackson

River diversion
Marsh creation
Influence area
Subprovince boundary
Barrier island study area

Map Produced By:

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National Wetlands Research Center
U.S. Army Corps of Engineers Project Office
New Orleans, LA 70118

Map ID: USGS-NWRC 2003-12-198
Map Date: May 12, 2003

Image: 2000 Landsat 7 Thematic Mapper (Classified Land-Water)

6 0 6 12
Miles

Subprovince 2 Alternative R1:
Reduce Rate of Annual Net Loss by 50%
(Minimize Salinity Changes)

N

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Subprovince 2 Alternative R1

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NEW ORLEANS, LOUISIANA

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PLATE B-11

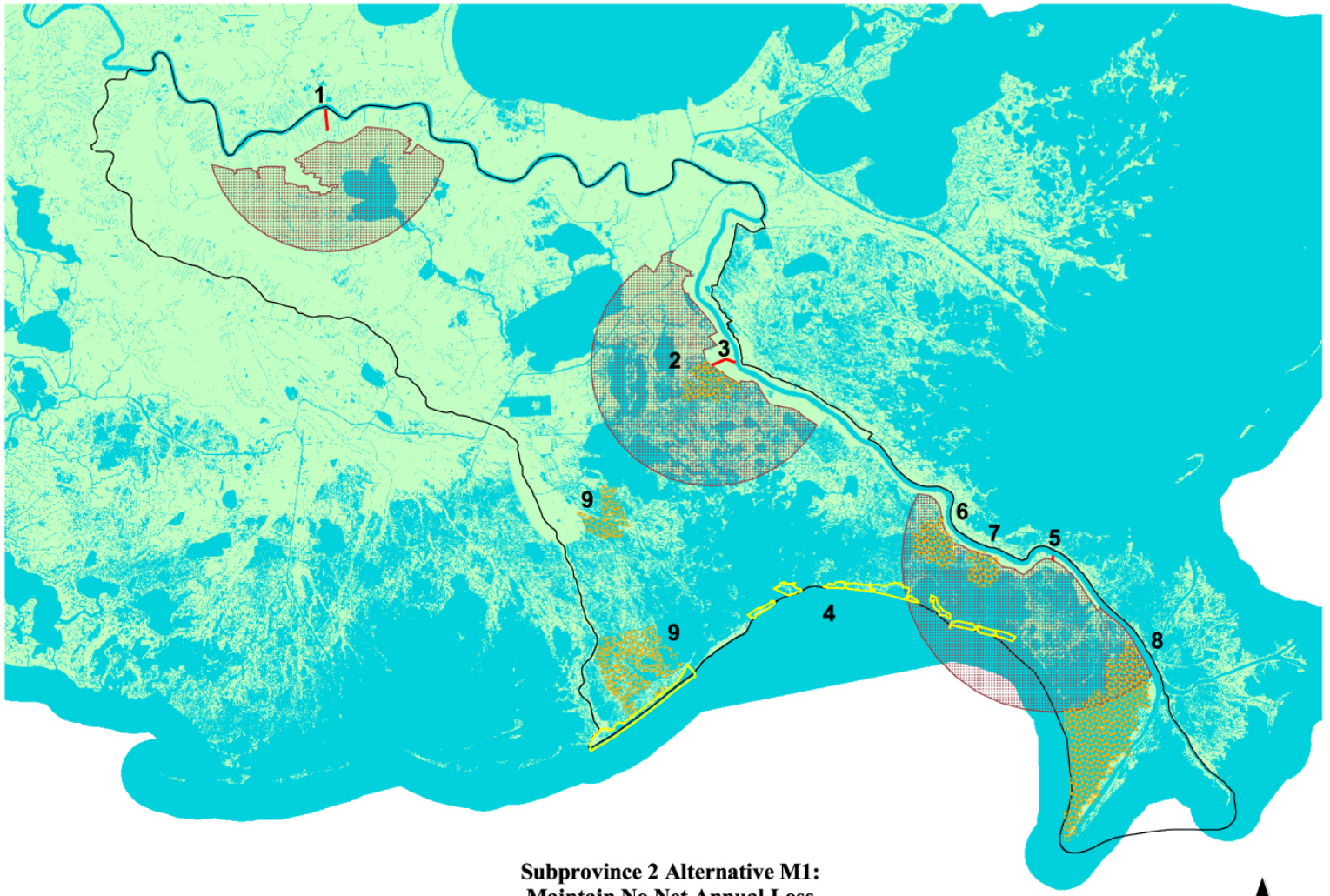
included in plans 5110, and 5120

Coastwide Plan Component
Subprovince 2 – M1

Minimize salinity changes included in plans 5410, and 7410:

- **1. 5,000 cfs diversion @ Des Allemands w/sediment enrichment**
- **2, Sediment delivery via pipeline @ Myrtle Grove**
- **3. 5,000 cfs diversion @ Myrtle Grove**
- **4. Barrier Island restoration @ Barataria Shoreline (3,000')**
- **5. 60,000 cfs diversion @ Fort Jackson**
- **6. Sediment delivery via pipeline @ Empire**
- **7. Sediment delivery via pipeline @ Bastion Bay**
- **8. Sediment delivery via pipeline @ Head of Passes**
- **9. Marsh creation @ Marsh creation feasibility study sites**

Subprovince 2 – M1



Measure Descriptions:

1) 5,000 cfs diversion at Lac des Allemands with sediment enrichment
2) Sediment delivery via pipeline at Myrtle Grove
3) 5,000 cfs diversion at Myrtle Grove
4) Barrier island feasibility study
5) 60,000 cfs diversion at Fort Jackson
6) Sediment delivery via pipeline at Empire
7) Sediment delivery via pipeline at Bastian Bay/Buras
8) Sediment delivery via pipeline at Main Pass
9) Marsh creation feasibility study

River diversion
Marsh creation
Influence area
Subprovince boundary
Barrier island study area

Map Produced By:

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National Wetlands Research Center
U.S. Army Corps of Engineers Project Office
New Orleans, LA 70118

Map ID: USGS-NWRC 2003-12-0201
Map Date: May 12, 2003

Image: 2000 Landsat 7 Thematic Mapper (Classified Land-Water)

6 0 6 12

Miles

Subprovince 2 Alternative M1:
Maintain No Net Annual Loss
(Minimize Salinity Changes)

N

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Subprovince 2 Alternative M1

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PLATE B-14

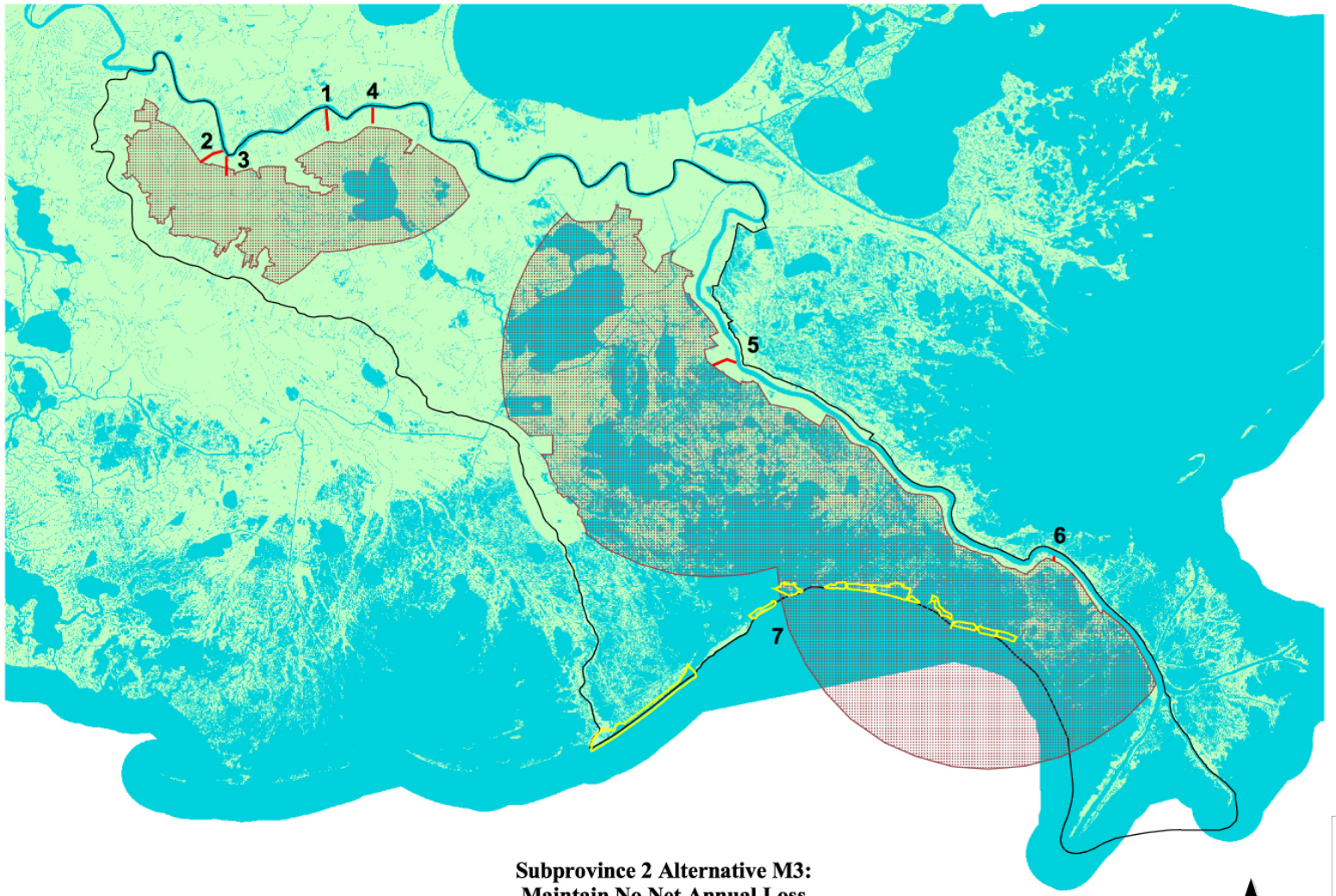
included in plans 5410, and 7410

Coastwide Plan Component
Subprovince 2 – M3

Mimic Historic Hydrology included in plans 5610 and 7610:

- **1. 1,000 cfs diversion @ Des Allemands**
- **2. 1,000 cfs diversion @ Donaldsonville**
- **3. 1,000 cfs diversion @ Pikes Peak**
- **4. 1,000 cfs diversion @ Edgard**
- **5. 75,000 cfs pulse diversion @ Myrtle Grove w/sediment enrichment**
- **6. 60,000 cfs diversion @ Fort Jackson**
- **7. Barrier Island restoration @ Barataria Shoreline (3,000')**

Subprovince 2 – M3



Measure Descriptions:

1) 1,000 cfs diversion at Lac des Allemands
2) 1,000 cfs diversion at Donaldsonville
3) 1,000 cfs diversion at Pikes Peak
4) 1,000 cfs diversion at Edgard
5) 75,000 cfs pulse at Myrtle Grove with sediment enrichment
6) 60,000 cfs diversion at Fort Jackson with sediment enrichment
7) Barrier island feasibility study

River diversion
Influence area
Subprovince boundary
Barrier island study area

Map Produced By:

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National Wetlands Research Center
U.S. Army Corps of Engineers Project Office
New Orleans, LA 70118

Map ID: USGS-NWRC 2003-12-0203
Map Date: May 12, 2003

Image: 2000 Landsat 7 Thematic Mapper (Classified Land-Water)

6 0 6 12
Miles

Subprovince 2 Alternative M3:
Maintain No Net Annual Loss
(Mimic Historic Hydrology)

N

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Subprovince 2 Alternative M3

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
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NEW ORLEANS, LOUISIANA

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PLATE B-16

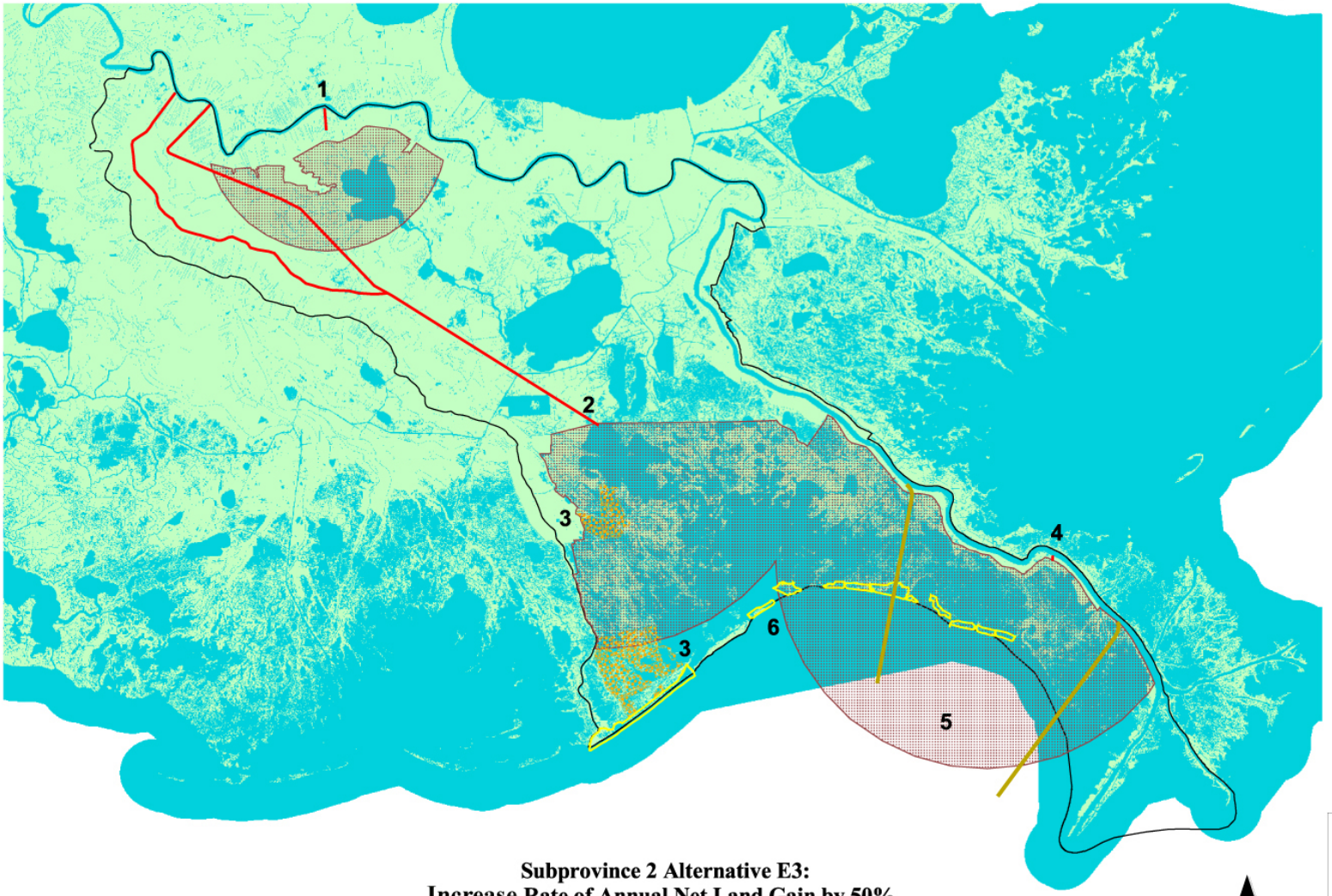
included in plans 5610, 7610 and 5620

Coastwide Plan Component
Subprovince 2 – E3

Mimic historic flood regimes included in plan 7002:

- **1. 5,000 cfs diversion @ Des Allemands w/sediment enrichment**
- **3. Marsh creation @ Marsh creation feasibility study sites**
- **2. 120,000 cfs diversion at Bayou Lafourche (Mississippi River Third Delta)**
- **4. 90,000 cfs diversion @ Fort Jackson w/sediment enrichment**
- **5. Relocation of Deep Draft Navigation Channel**
- **6. Barrier Island restoration @ Barataria Shoreline (3,000')**

Subprovince 2 – E3



Measure Descriptions:

1) 5,000 cfs diversion at Lac des Allemands with sediment enrichment
2) 120,000 cfs diversion at Bayou Lafourche (Third Delta)
3) Marsh creation feasibility study
4) 90,000 cfs diversion at Fort Jackson with sediment enrichment
5) Relocation of deep draft navigation channel
6) Barrier island feasibility study

Relocate navigation channel
River diversion
Marsh creation
Influence area
Subprovince boundary
Barrier island study area

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Map ID: USGS-NWRC 2003-12-0206
Map Date: May 12, 2003

Image: 2000 Landsat 7 Thematic Mapper (Classifed Land-Water)

6 0 6 12
Miles

Subprovince 2 Alternative E3:
Increase Rate of Annual Net Land Gain by 50%
(Mimic Historic Hydrology)

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Subprovince 2 Alternative E3

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PLATE B-19

included in plan 7002

Coastwide Plan Component
Subprovince 3 – R1

Maximize Atchafalaya Flow, included in plans 5110, 5610, 5410, 7610 and 7410:

Maximum Atchafalaya/Mississippi flows to Terrebonne

- **1. CWPPRA Bayou Lafourche 1,000 cfs pump**
- **2. Convey Atchafalaya water to northern Terrebonne marshes**
- **3. Freshwater introduction via Blue Hammock Bayou**
- **4.**
- **5. CWPPRA Penchant Basin Plan**

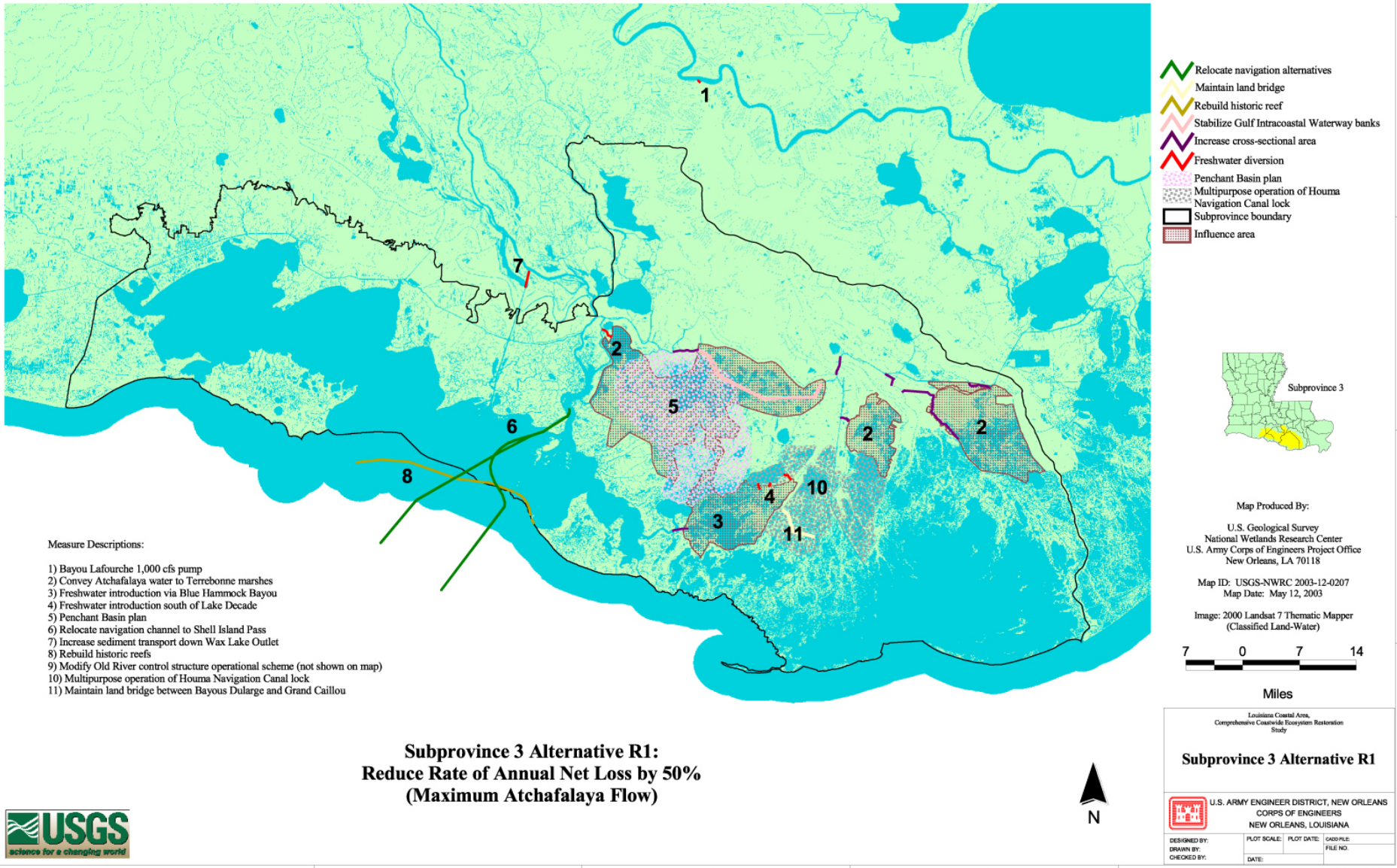
Maximum Atchafalaya Delta development

- **6. Relocate the navigation channel to Shell Island Pass**
- **7. Increase sediment transport down Wax Lake Outlet**
- **8. Rebuild historic barrier between Point Au Fer and Eugene Island**
- **9. Modify ORCS Operations to increase sediment transport**

Moderate rehabilitation/maintenance of geomorphic features

- **10. Multi-purpose operation of the Houma Navigation Canal Lock**
- **11. Construct a land bridge between Bayous DuLarge and Grand Caillou**

Subprovince 3 – R1



included in plans 5110, 5610, 5410, 7610, 7410, and 5710

Coastwide Plan Component
Subprovince 3 – M1

- **Maximize Geomorphic features/river infl. Plan 7002**
- Maximum delta development using Miss. River
  - 1. Third delta 120,000 cfs diversion
  - 2. B. Lafourche 1,000 cfs pump

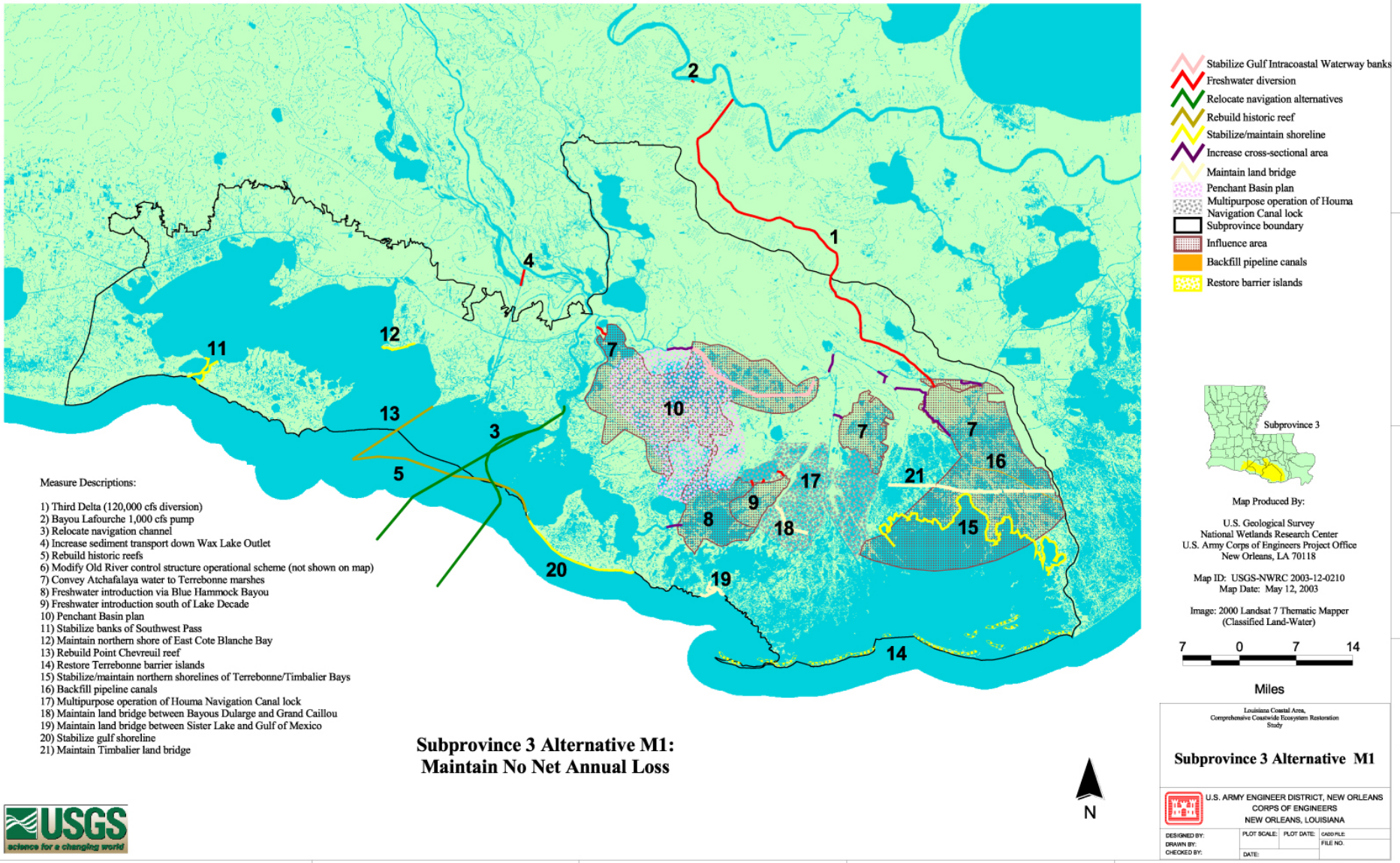
  Maximize Atchafalaya Delta Development
  - 3. Relocate navigation channel
  - 4. Increase sediment down WLO
  - 5. Rebuild historic reefs from pt. Au Fer to Marsh Island
  - 6. Modify ORCS operation to increase sediment

  Maximum Atch flows to Terrebonne
  - 7. Convey Atchafalaya water to Terrebonne
  - 8. FW introduction via Blue Hammock Bayou
  - 9. FW introduction south of L. Decade
  - 10. CWPPRA Penchant Basin Plan

Coastwide Plan Component
Subprovince 3 – M1, continued

- Maximum rehabilitation /maintenance of geomorphic features
  - 11. Stabilize banks of SW Pass
  - 12. Maintain N. shore of East Cote Blanche Bay
  - 13. Rebuild Pt. Chevreuil Reef
  - 14. Restore Terrebonne Barrier Islands
  - 15. Stabilize N shorelines of Terr/Timbalier Bays
  - 16. Backfill pipeline canals
  - 17. Multipurpose operation of HNC lock
  - 18. Maintain land bridge - B. Dularge/B. Grand Caillou
  - 19. Maintain land bridge - Sister Lake and Gulf
  - 20. Stabilize Gulf shoreline Pt. Au Fer
  - 21. Maintain Timbalier land bridge

Subprovince 3 – M1



included in plan 7002

Coastwide Plan Component Subprovince 4 – E2

- **Perimeter salinity control**
  - 1. Salinity control, Oyster Bayou
  - 2. Salinity control, Longpoint B.
  - 3. Salinity control at Black Lake Bayou
  - 4. Salinity control at Alkali Ditch
  - 5. New lock on GIWW
  - 6. Modify existing Cameron Creole Struct
  - 7. East Sabine HR
  - 8. Salinity control at Black Bayou
  - 9. Salinity control at Hwy 82 on Causeway

Coastwide Plan Component Subprovince 4 – E2 (cont.)

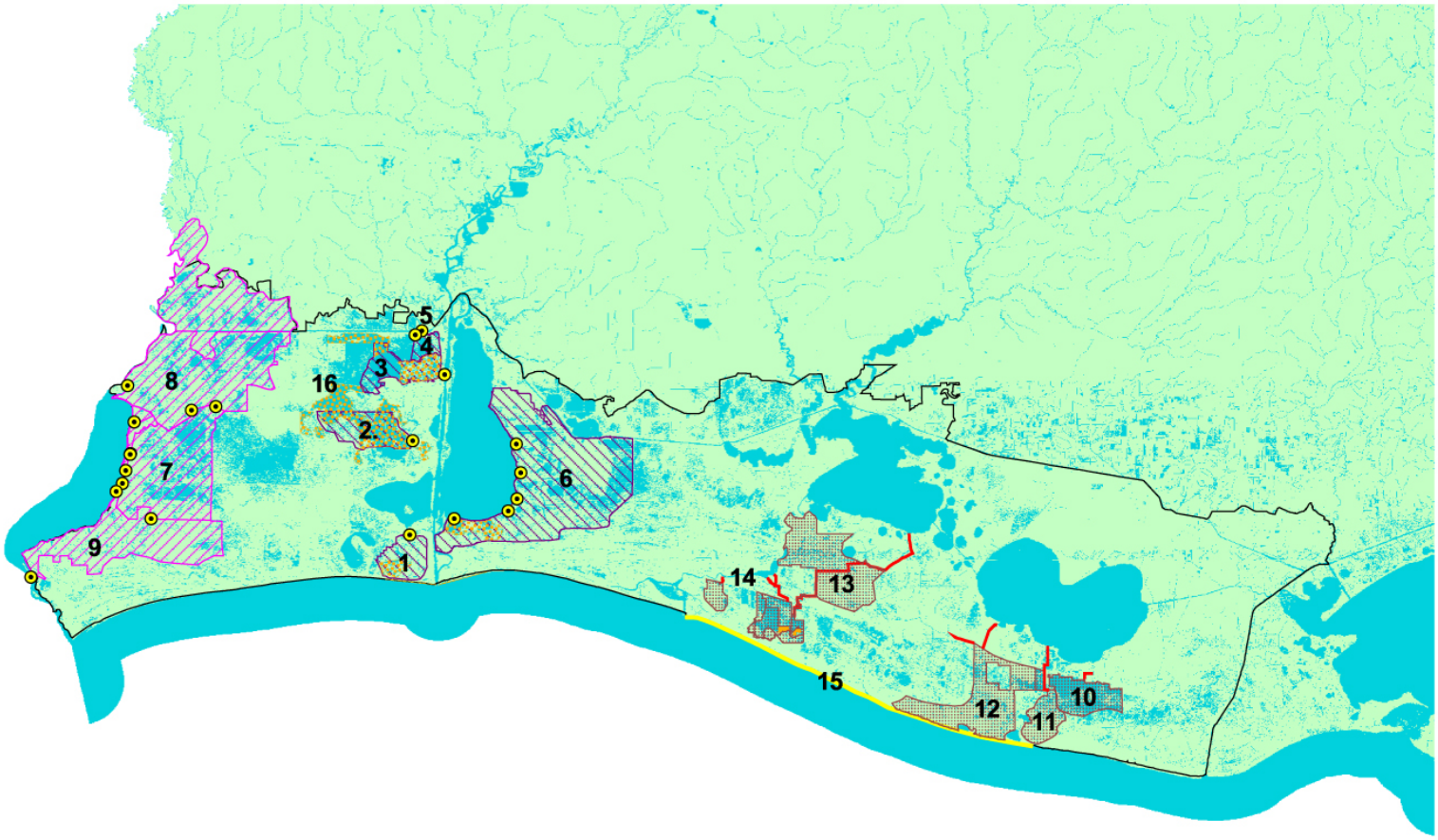
- **Freshwater introduction**
  - 10. Pecan Island
  - 11. Rollover Bayou
  - 12. Hwy 82
  - 13. Little Pecan Bayou
  - 14. S. Grand Chenier

  Geomorphic Features

  15. Gulf shoreline stabilization

  16. Calcasieu Ship Channel beneficial use

Subprovince 4 – E2



Measure Descriptions:

1) Salinity control at Oyster Bayou
2) Salinity control at Longpoint Bayou
3) Salinity control at Black Lake Bayou
4) Salinity control at Alkali Ditch
5) New lock at the Gulf Intracoastal Waterway
6) Modify existing Cameron-Creole structures
7) East Sabine hydrologic restoration
8) Salinity control at Black Bayou
9) Salinity control at Hwy 82 causeway
10) Freshwater introduction at Pecan Island
11) Freshwater introduction at Rollover Bayou
12) Freshwater introduction at Hwy 82
13) Freshwater introduction at Little Pecan Bayou
14) Freshwater introduction at South Grand Chenier
15) Gulf shoreline stabilization
16) Calcasieu ship channel beneficial use

- Salinity control structure
- Marsh creation
- Freshwater influence area
- Subprovince boundary
- Sabine subbasin salinity control
- Calcasieu subbasin salinity control
- Gulf shoreline stabilization
- Freshwater introduction access

Map Produced By:

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National Wetlands Research Center
U.S. Army Corps of Engineers Project Office
New Orleans, LA 70118

Map ID: USGS-NWRC 2003-12-193
Map Date: May 9, 2003

Image: 2000 Landsat 7 Thematic Mapper
(Classified Land-Water)

5 0 5 10

Miles

Subprovince 4 Alternative E2:
Increase Rate of Annual Net Land Gain by 50%
(Perimeter Salinity Control)

N

Louisiana Coastal Area,
Comprehensive Coastwide Ecosystem Restoration
Study

Subprovince 4 Alternative E2

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

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FILE NO.
DATE:

PLATE B-28

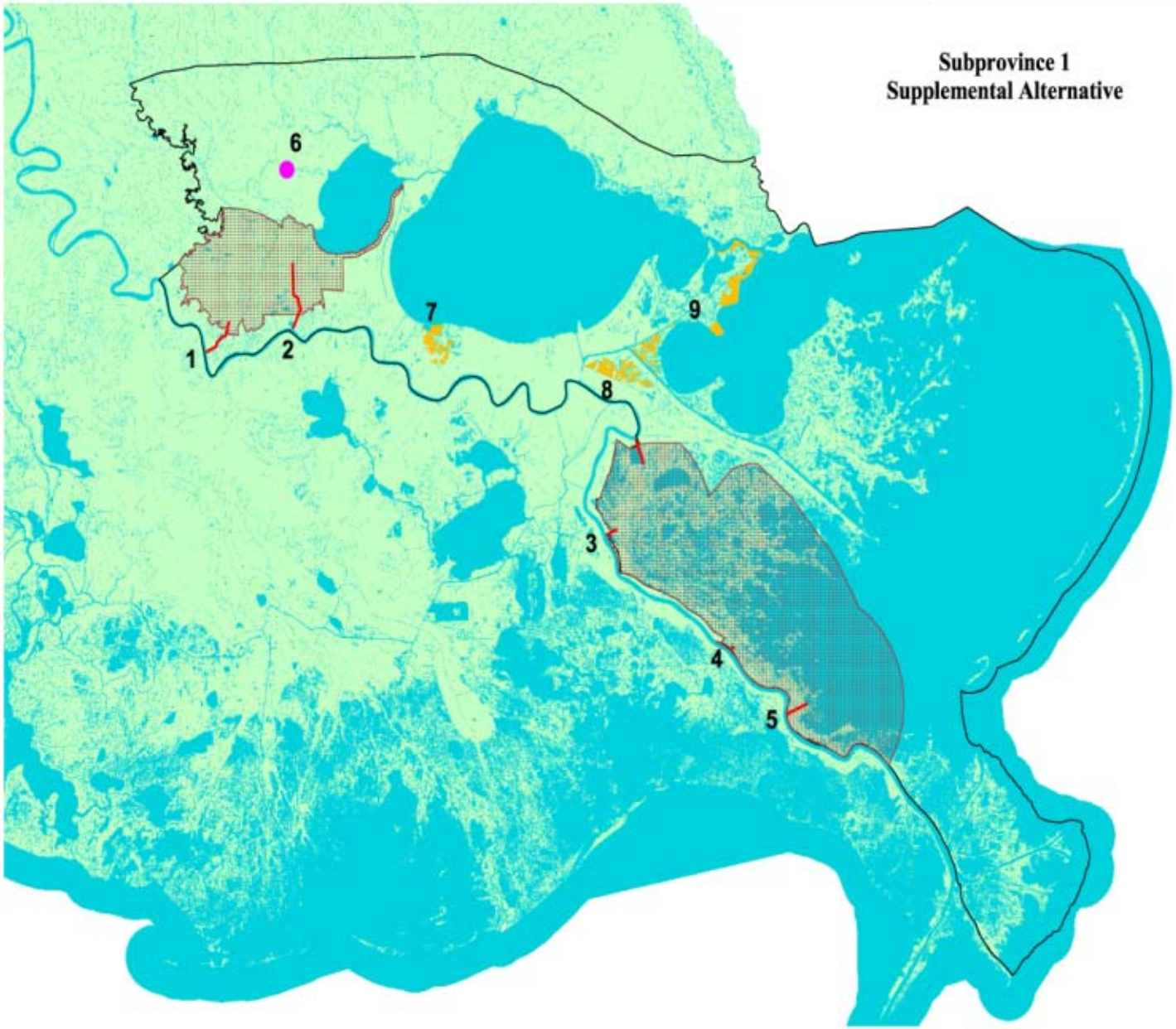
Combinable with all Subprovince 1-3 plan combinations

Supplemental Plan

State and Federal agencies involved in plan formulation met to identify a set of measures that may result in higher benefits at lower costs. This feedback to the study team was based on professional judgment of the various participants. This set of measures, which constitutes a supplemental plan, is being run through the modeling and benefit assessment process, so that it can be compared to the original array of cost effective coast-wide plans.

Coastwide Plan Component Subprovince 1 – Supplemental – M2+ (10-12 missing from map)

- 1. 5,000 cfs at Convent
- 2. 1,000 cfs at Hope Canal
- 3. 10,000 cfs at Whites Ditch
- 4. 110,000 cfs at Am/Cal Bay with sed. enrich.
- 5. 12,000 cfs at B. Lamoque
- 6. Gap Amite R. Div. Canal spoil banks
- 7. Sediment delivery at La Branche
- 8. Rehabilitate Violet Siphon
- 9. Marsh nourishment N. O. East Land Bridge
- 10. Reauthorize Caernarvon for marsh creation
- 11. MRGO salinity mgmt. (Seabrook structure) and environmental features
- 12. CWPPRA opportunistic use of BC



Measure Descriptions:

1) 5,000 cfs diversion at Convent/Blind River
2) 1,000 cfs diversion at Hope Canal
3) 10,000 cfs diversion at White's Ditch
4) 110,000 cfs diversion at American/California Bay with sediment enrichment
5) 12,000 cfs diversion at Bayou Lamoque
6) Increase Amite River influence by gapping spoil banks on diversion canal
7) Sediment delivery via pipeline at Labranche
8) Rehabilitate Violet siphon for enhanced influence into Central Wetlands
9) Marsh nourishment on the New Orleans East land bridge

Spoil bank gapping
River diversion
Influence area
Subprovince boundary
Marsh creation

Map Produced By:

U.S. Geological Survey
National Wetlands Research Center
U.S. Army Corps of Engineers Project Office
New Orleans, LA 70118

Map ID: USGS-NWRC 2003-12-0235
Map Date: July 28, 2003

Image: 2000 Landsat 7 Thematic Mapper
(Classified Land-Water)

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Comprehensive Coastwide Ecosystem Restoration Study

Subprovince 1
Supplemental Alternative

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

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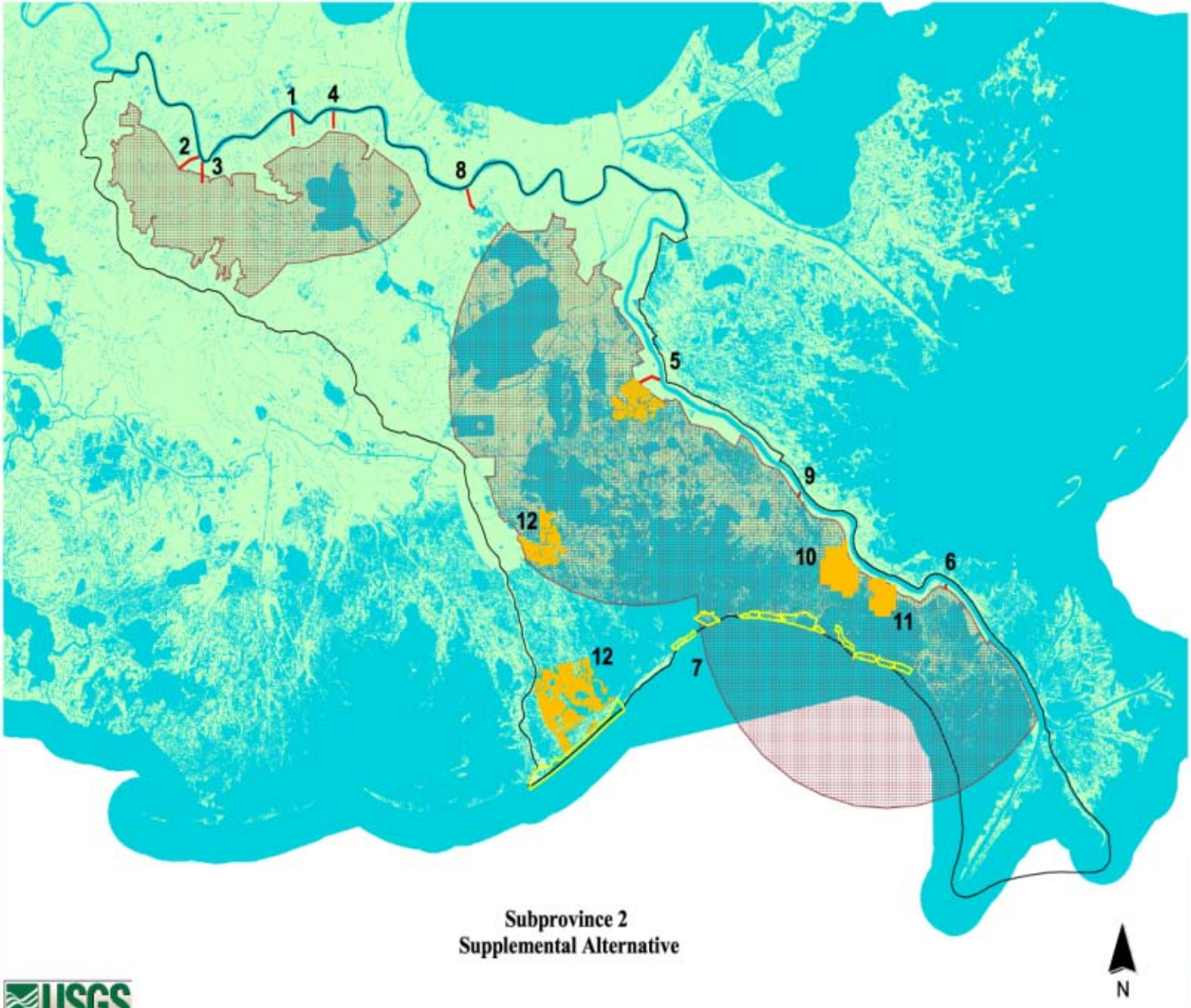
Subprovince 2 – Supplemental M1/E3

- 1. 1,000 cfs at Des Allemands,
- 2. 1,000 cfs at Donaldsonville
- 3. 1,000 cfs at Pikes Peak
- 4. 1,000 cfs at Edgard
- 5. 5,000 cfs pulse Myrtle Grove/sed. delivery
- 6. No diversion at Ft. Jackson
- 7. Barrier island restoration @ Feas. Study
- 8. 5,000 cfs at Davis Pond
- 9. No diversion at Port Sulfur
- 10. Sediment delivery by pipeline Port Sulfur, not Empire
- 11. Sediment delivery by pipeline Boothville, not Bastion Bay
- 12. Marsh creation at Feas. Study sites
- 13. Third Delta study



Measure Descriptions:

1) 1,000 cfs diversion at Lac des Allemands
2) 1,000 cfs diversion at Donaldsonville
3) 1,000 cfs diversion at Pikes Peak
4) 1,000 cfs diversion at Edgard
5) 5,000 cfs pulse at Myrtle Grove with sediment enrichment
6) 5,000 cfs diversion at Fort Jackson with sediment enrichment
7) Barrier island feasibility study
8) 5,000 cfs diversion at Davis Pond
9) 5,000 cfs diversion at Port Sulphur
10) Sediment delivery via pipeline at Empire
11) Sediment delivery via pipeline at Bastian Bay
12) March creation study areas

River diversion
Influence area
Subprovince boundary
Barrier island study area
Marsh creation

Map Produced By:

U.S. Geological Survey
National Wetlands Research Center
U.S. Army Corps of Engineers Project Office
New Orleans, LA 70118

Map ID: USGS-NWRC 2003-12-0236
Map Date: July 28, 2003

Image: 2000 Landsat 7 Thematic Mapper (Classified Land-Water)

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Subprovince 2
Supplemental Alternative

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Subprovince 2
Supplemental Alternative

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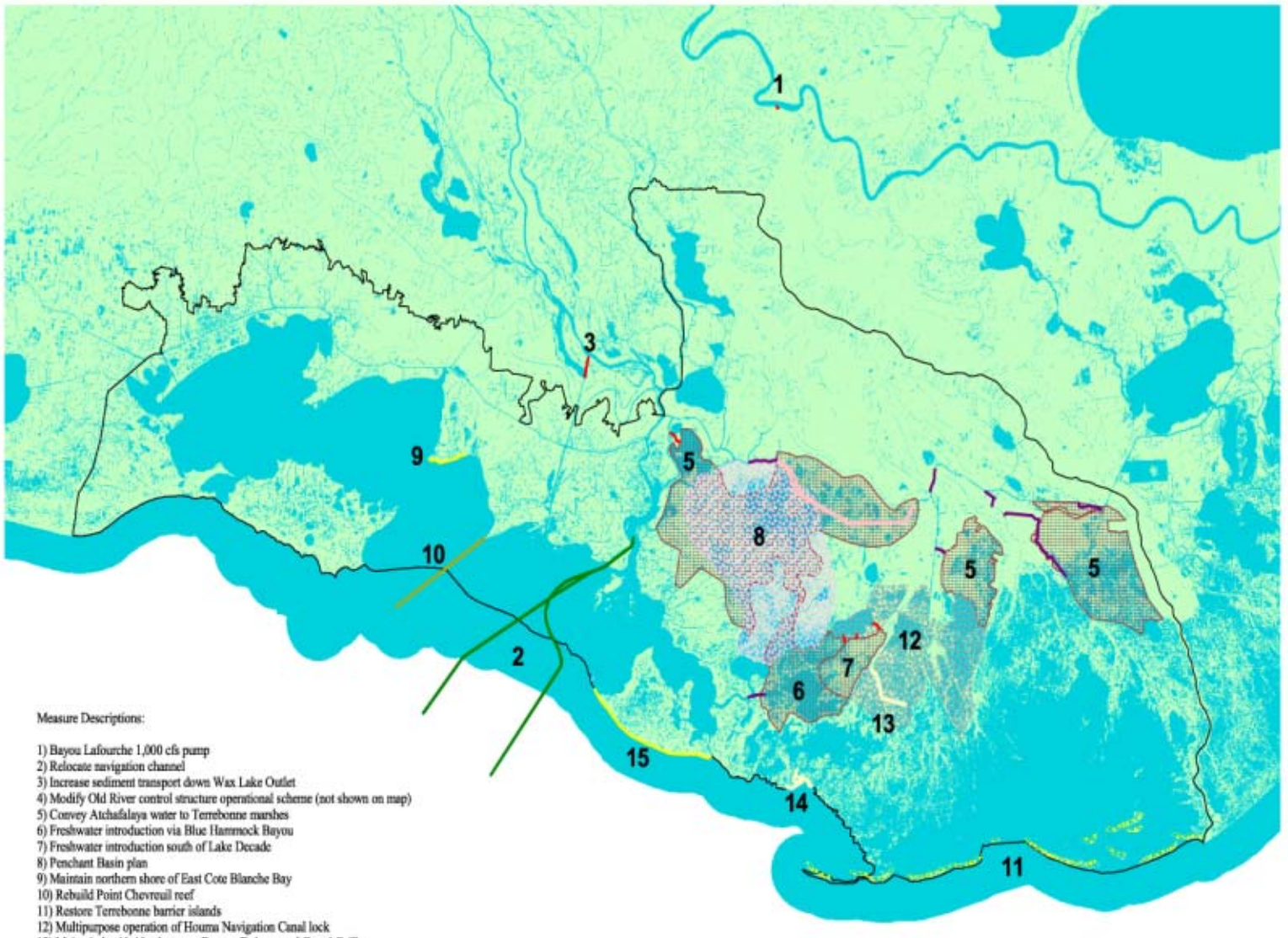
Subprovince 3 – Supplemental – R1/M1

- 1. 1,000 cfs down B. Lafourche
- 2. Relocate navigation channel
- 3. Increase sed. transport down WLO
- 4. Modify sediment distribution of ORCS
- 5. Convey Atchafalaya water to Terrebonne
- 6. FW introduction to Blue Hammock
- 7. FW introduction south of L. Decade
- 8. Penchant Basin Plan
- 9. Maintain N. shore of E. Cote Blanche Bay
- 10. Rebuild historic P. Chevreuil Reef
- 11. Restore Terrebonne Barrier Islands
- 12. Multipurpose operation of HNC Lock
- 13. Maintain land bridge Dularge/Grand Caillou
- 14. Maintain landbridge Sister Lake/Gulf
- 15. Stabilize Gulf shoreline of Pt. Au Fer



Measure Descriptions:

1) Bayou Lafourche 1,000 cfs pump
2) Relocate navigation channel
3) Increase sediment transport down Wax Lake Outlet
4) Modify Old River control structure operational scheme (not shown on map)
5) Convey Atchafalaya water to Terrebonne marshes
6) Freshwater introduction via Blue Hammock Bayou
7) Freshwater introduction south of Lake Decade
8) Penchant Basin plan
9) Maintain northern shore of East Cote Blanche Bay
10) Rebuild Point Chevreuil reef
11) Restore Terrebonne barrier islands
12) Multipurpose operation of Houma Navigation Canal lock
13) Maintain land bridge between Bayous Dularge and Grand Caillou
14) Maintain land bridge between Sister Lake and Gulf of Mexico
15) Stabilize gulf shoreline

Subprovince 3
Supplemental Alternative

N

- Stabilize Gulf Intracoastal Waterway banks
- Freshwater diversion
- Relocate navigation alternatives
- Rebuild historic reef
- Stabilize/maintain shoreline
- Increase cross-sectional area
- Maintain land bridge
- Penchant Basin plan
- Multipurpose operation of Houma Navigation Canal lock
- Subprovince boundary
- Influence area
- Restore barrier islands

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National Wetlands Research Center
U.S. Army Corps of Engineers Project Office
New Orleans, LA 70118

Map ID: USGS-NWRC 2003-12-0237
Map Date: July 28, 2003

Image: 2000 Landsat 7 Thematic Mapper
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Louisiana Coastal Area,
Comprehensive Coastwide Ecosystem Restoration
Study

Subprovince 3
Supplemental Alternative

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Coastwide Plan Component Subprovince 4 – E2

- **Perimeter salinity control**
  - 1. Salinity control, Oyster Bayou
  - 2. Salinity control, Longpoint B.
  - 3. Salinity control at Black Lake Bayou
  - 4. Salinity control at Alkali Ditch
  - 5. No new lock on GIWW
  - 6. Modify existing Cameron Creole Struct
  - 7. East Sabine HR
  - 8. Salinity control at Black Bayou
  - 9. Salinity control at Hwy 82 on Causeway

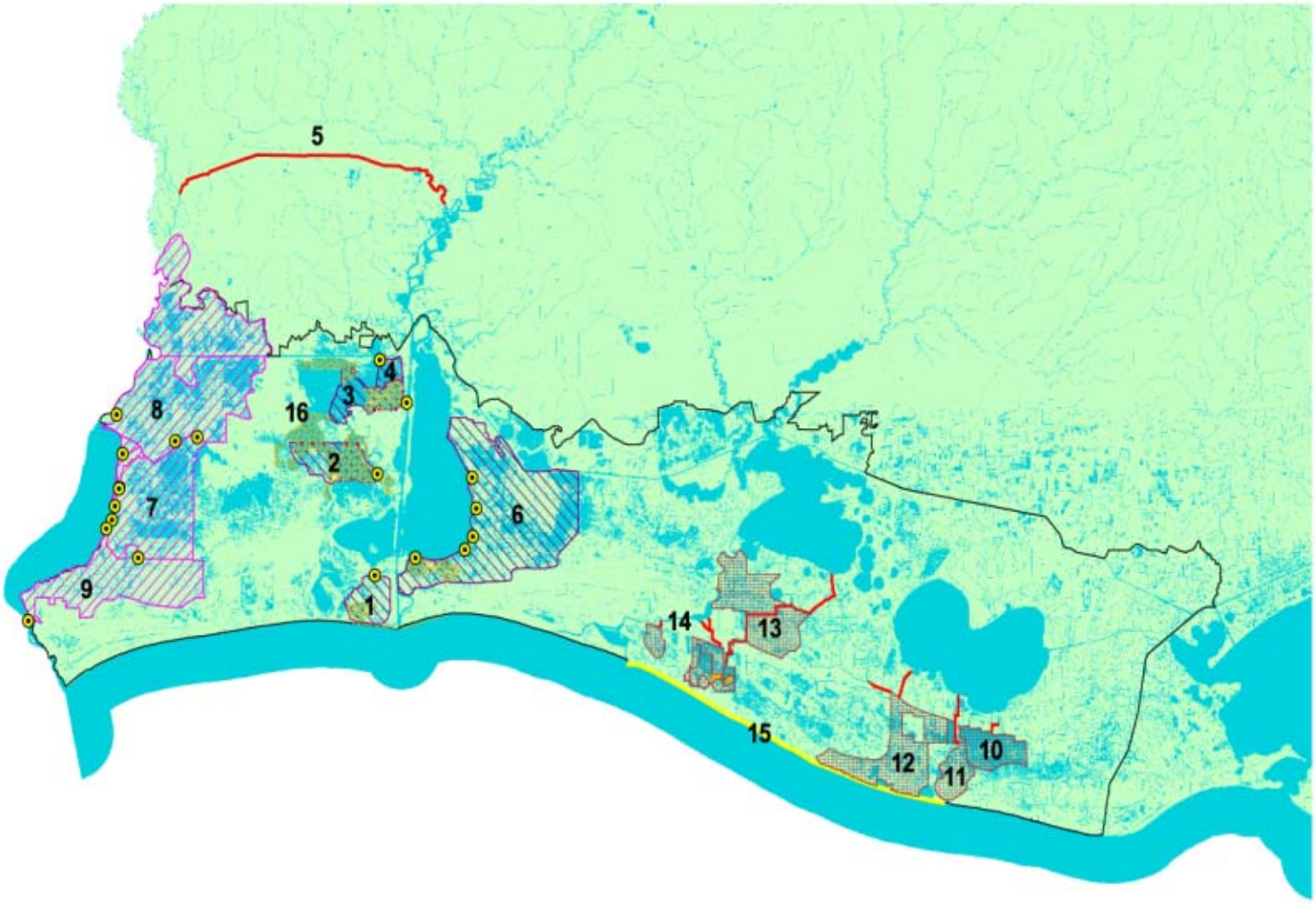
Coastwide Plan Component Subprovince 4 – E2 (cont.)

- **Freshwater introduction**
  - 10. Pecan Island
  - 11. Rollover Bayou
  - 12. Hwy 82
  - 13. Little Pecan Bayou
  - 14. S. Grand Chenier

  Geomorphic Features

  15. Gulf shoreline stabilization

  16. Calcasieu Ship Channel beneficial use



Measure Descriptions:

1) Salinity control at Oyster Bayou
2) Salinity control at Longpoint Bayou
3) Salinity control at Black Lake Bayou
4) Salinity control at Alkali Ditch
5) Freshwater introduction via Sabine River Irrigation Canal
6) Modify existing Cameron-Creole structures
7) East Sabine hydrologic restoration
8) Salinity control at Black Bayou
9) Salinity control at Hwy 82 causeway
10) Freshwater introduction at Pecan Island
11) Freshwater introduction at Rollover Bayou
12) Freshwater introduction at Hwy 82
13) Freshwater introduction at Little Pecan Bayou
14) Freshwater introduction at South Grand Chenier
15) Gulf shoreline stabilization
16) Calcasieu ship channel beneficial use

Salinity control structure
Marsh creation
Freshwater influence area
Subprovince boundary
Sabine subbasin salinity control
Calcasieu subbasin salinity control
Gulf shoreline stabilization
Freshwater introduction access

Map Produced By:

U.S. Geological Survey
National Wetlands Research Center
U.S. Army Corps of Engineers Project Office
New Orleans, LA 70118

Map ID: USGS-NWRC 2003-12-0238
Map Date: July 28, 2003

Image: 2000 Landsat 7 Thematic Mapper (Classified Land-Water)

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Miles

Subprovince 4
Supplemental Alternative

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Comprehensive Coastwide Ecosystem Restoration Study

Subprovince 4
Supplemental Alternative

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
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NEW ORLEANS, LOUISIANA

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PLATE

LCA Project Schedule

Evaluation of Plans	**Mar 03**
Draft Report	**Sep 03**
Public Review	**Oct 03**
Division Engineer Notice	**Mar 04**
Final Report	**May 04**
Chief's Report	**Jun 04**

Comments